milepoint-based linear referencing method for the roads. Each Road RCLink 1221 is an Entity, and therefore has a unique ID and associated Attributes that can be used to associate values to the roads in the road network.

[0119]   **Road Mileposts.** Road Mileposts 1240 define the physical location of mile posts along the road network. When combined with RCLinks 1221, 1222 (or other Traversals), mileposts establish an alternative linear referencing method.

[0120]   **Lane Section.** A Lane Section 1250 represents the portion of a lane that is contained within a Division Section. Lane Sections are defined for all lanes of a Division Section.

[0121]   **Lane.** A Lane 1251 represents a physical lane that is defined as the union of a sequence of contiguous Lane Sections.

[0122]   The Road-Division Data Model is characterized not only by the objects within the model, but also by the properties associated with these objects and the relationships between them. There are properties associated to each object in the data model and these properties are used to support data model specific functionality. For example, the length property of a Division Section specifies the length of that Division Section in miles and is used to calculate road-miles, division-miles, and lane-miles for reports. The relationships between the objects in the road model are also used to support data model specific functionality. For example, the fact that there is a one-to-many (non dynamic segmentation) relationship between Road Sections and Division Sections is used to support rolling up and down of values between Road

Sections and Division Sections. The relationships depicted in Figure 12 are summarized in the following list:

[0123] **Road RCLink traverses Road Sections** (1261). A Road RCLink is defined as an ordered sequence of sub-sections of Road Sections.

[0124] **Road Sections connected by Road Intersections** (1262). Intersections between Road Sections are indicated by Road Intersections.

[0125] **Road Intersections are equivalent to Division Intersections** (1263). Road Intersections and Division Intersections are different representations of the same physical intersections.

[0126] **Division RCLink traverses Division Sections** (1264). A Division RCLink is defined as an ordered sequence of sub-sections of Division Sections.

[0127] **Mileposts lie on Division Sections** (1265). Mileposts exist at locations on Division Sections.

[0128] **Division Sections connected by Division Intersections** (1267). Intersections between those Division Sections that are part of a mainline road are indicated by Division Intersections.

[0129] **Division Sections connected by Division Nodes** (1268). Intersections between Division Sections are indicated by Division Nodes.

[0130] **Road Section defined by Division Sections** (1269). A Road Section is defined by the Division Sections (i.e., divisions of that road) that it contains.

[0131] **Division Section includes Lanes** (1270). A Lane is included in a Division Section.

[0132]   In addition to the objects and relationships listed above, there are a number of other general concepts that apply across the Road-Division Data Model. These concepts are described below:

[0133] **Entity.** The term Entity refers to a real-world object about which the system maintains data. Thus, most of the objects depicted in Figure 12 qualify as Entities. Each Entity is identified by an Entity class ID, which describes the type of Entity, and an Entity ID, which identifies a specific Entity within that Entity class. In general, each Entity has an associated Entity table in which the Entity IDs are enumerated and each row of the table corresponds to a specific Entity. Other tables may be associated with the Entity in order to store other information about that Entity.

[0134] **Properties and Attributes.** In addition to the Entity ID, two other types of information about each Entity are maintained. A Property refers to information about an Entity that is required and is often automatically maintained by the software or by required maintenance practices. For example, the shape data associated with an Entity is a property. An Attribute refers to user-defined information about an Entity. In other words, Attributes are the information that the user would normally think they are using, and Properties are the background information that is used to satisfy user requests. Properties and Attributes are usually stored in Property or Attribute tables, though they can also be stored directly in Entity tables.